

CLAIMED INVENTION

We claim:

1. A method comprising:

receiving data segments of at least one class of service at each of a plurality of ingress line cards, each class of service having a guaranteed percentage of transmission bandwidth;

marking a portion of the data segments of each class of service based on the guaranteed percentage of bandwidth of the class of service, such that if data transmitted from a class of service exceeds the guaranteed percentage of transmission bandwidth of the class of service, the number of data segments marked corresponds to the guaranteed percentage of transmission bandwidth of the class of service, and if data transmitted from a class of service is less than the guaranteed percentage of transmission bandwidth of the class of service, all the data segments of the class are marked; and

preferentially transmitting the marked data segments from each class of service.

2. The method of claim 1, further comprising:

transmitting unmarked data segments from each class of service equally.

3. The method of claim 1, wherein the data segments are asynchronous transfer mode cells.

4. The method of claim 1, wherein the data segments are data types selected from the group consisting of frame relay packet, voice transmission data, internet protocol packet, or circuit emulation service packet.

5. The method of claim 3, wherein marking includes implementing a must-serve bit on the cell.

6. The method of claim 2, wherein preferentially transmitting the marked data segments includes guaranteeing the marked data segments are transmitted prior to transmitting the unmarked segments.

7. An apparatus comprising:

means for receiving data segments of at least one class of service at each of a plurality of ingress line cards, each class of service having a guaranteed percentage of transmission bandwidth;

means for marking a portion of the data segments of each class of service based on the guaranteed percentage of bandwidth of the class of service, such that if data transmitted from a class of service exceeds the guaranteed percentage of transmission bandwidth of the class of service, the number of data segments marked corresponds to the guaranteed percentage of transmission bandwidth of the class of service, and if data transmitted from a class of service is less than the guaranteed percentage of transmission bandwidth of the class of service, all the data segments of the class are marked; and

means for preferentially transmitting the marked data segments from each class of service.

8. The apparatus of claim 7, further comprising:

means for transmitting unmarked data segments from each class of service equally.

9. The apparatus of claim 7, wherein the data segments are asynchronous transfer mode cells.

10. The apparatus of claim 7, wherein the data segments are data types selected from the group consisting of frame relay packet, voice transmission data, internet protocol packet, or circuit emulation service packet.

11. The apparatus of claim 10, wherein marking includes implementing a must-serve bit on the cell.

12. The apparatus of claim 9, wherein preferentially transmitting the marked data segments includes guaranteeing the marked data segments are transmitted prior to transmitting the unmarked segments.

13. A machine-readable medium that provides executable instructions, which when executed by a processor, cause said processor to perform a method, the method comprising:

receiving data segments of at least one class of service at each of a plurality of ingress line cards, each class of service having a guaranteed percentage of transmission bandwidth;

marking a portion of the data segments of each class of service based on the guaranteed percentage of bandwidth of the class of service, such that if data transmitted from a class of service exceeds the guaranteed percentage of transmission bandwidth of the class of service, the number of data segments marked corresponds to the guaranteed percentage of transmission bandwidth of the class of service, and if data transmitted from a class of service is less than the guaranteed percentage of transmission bandwidth of the class of service, all the data segments of the class are marked; and

preferentially transmitting the marked data segments from each class of service.

14. The machine-readable medium of claim 13, wherein the method further comprises:

transmitting unmarked data segments from each class of service equally.

15. The machine-readable medium of claim 13, wherein the data segments are asynchronous transfer mode cells.

16. The machine-readable medium of claim 13, wherein the data segments are data types selected from the group consisting of frame relay packet, voice transmission data, internet protocol packet, or circuit emulation service packet.

17. The machine-readable medium of claim 16, wherein marking includes implementing a must-serve bit on the cell.

18. The machine-readable medium of claim 14, wherein preferentially transmitting the marked data segments includes guaranteeing the marked data segments are transmitted prior to transmitting the unmarked segments.

19. An apparatus comprising:

 a receiving device to receive data segments of at least one class of service at each of a plurality of ingress line cards, each class of service having a guaranteed percentage of transmission bandwidth;

 a marking device to mark a portion of the data segments of each class of service based on the guaranteed percentage of bandwidth of the class of service, such that if data transmitted from a class of service exceeds the guaranteed percentage of transmission bandwidth of the class of service, the number of data segments marked corresponds to the guaranteed percentage of transmission bandwidth of the class of service, and if data transmitted from a class of service is less than the guaranteed percentage of transmission bandwidth of the class of service, all the data segments of the class are marked; and

a transmitting device to preferentially transmit the marked data segments from each class of service.

20. The apparatus of claim 19, wherein the transmitting device is capable of transmitting unmarked data segments from each class of service equally.

21. The apparatus of claim 19, wherein the data segments are asynchronous transfer mode cells.

22. The apparatus of claim 19, wherein the data segments are data types selected from the group consisting of frame relay packet, voice transmission data, internet protocol packet, or circuit emulation service packet.

23. The apparatus of claim 22, wherein marking includes implementing a must-serve bit on the cell.

24. The apparatus of claim 21, wherein preferentially transmitting the marked data segments includes guaranteeing the marked data segments are transmitted prior to transmitting the unmarked segments.